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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 2 1989

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Dietary Exposure Analysis for the Second Round Review of Ethion Using Anticipated Residues

FROM: J. Robert Tomerlin, Ph.D. *JR Tomerlin 8/7/89*
Tolerance Assessment System Staff
HED/SACB (H7509C)

THROUGH: Reto Engler, Ph.D. *for ABK 8/14/89*
Chief, Science Analysis and Coordination Branch
Health Effects Division (H7509C)

TO: Lois Rossi, Chief
Reregistration Branch
Special Review and Reregistration Division (H7508C)

Action Requested

Provide an estimate of dietary exposure to ethion from registered commodities using anticipated residue and per cent crop treated data.

Discussion

1. Toxicology Endpoint: The routine chronic TAS analysis used a reference dose (PADI) of 0.0005 mg/kg body weight/day, based upon a NOEL of 0.05 mg/kg body weight/day and an uncertainty factor of 100 from a 21 day human oral dosing study. This value has been approved by HED (4/19/89) and Agency (5/17/89) reference dose committees.

The acute TAS analysis used a NOEL of 0.05 mg/kg body weight for cholinesterase (ChE) inhibition from a human study (personal communication, Whang Phang). This is the same NOEL on which the reference dose for chronic exposure is based.

2. Residue Information: Food uses evaluated were published tolerances from 40 CFR 180.173 and food additive tolerances from 40 CFR 185.2750. Anticipated residue (AR) estimates for chronic exposure analyses were developed from FDA monitoring data and field residue data for the livestock feed items corn and sorghum, processing studies, and livestock feeding studies provided by the registrant. Anticipated residue data could not be developed for tea, so the tolerance was used for this commodity. A summary of

the anticipated residue values used in the analysis is attached as Table 1a.

Anticipated residues used in the acute exposure analysis were maximum values from field residue studies, proposed tolerances, or tolerances (D. F. Edwards memo, 7/31/89). The residue values used in the acute exposure analysis are shown in Table 1b.

Anticipated residues for processed commodities (e.g., juice), were derived by multiplying the value for the raw agricultural commodity by the appropriate concentration/reduction factor determined from processing studies submitted by the registrant. This procedure was followed for residues used in both the chronic and acute exposure analyses. The methods used in deriving the AR data are fully described in two memoranda, D. F. Edwards to J. R. Tomerlin (7/31/89) and C. Deyrup to A. B. Kocialski (7/31/89).

3. Chronic Exposure Analysis: The TAS chronic exposure analysis uses tolerance level residues and 100 per cent crop treated to estimate the Theoretical Maximum Residue Contribution (TMRC) for the overall U.S. population and 22 population subgroups. An exposure estimate more closely approximating actual exposure, the Anticipated Residue Contribution (ARC), may be calculated using anticipated residue data. The TMRC and ARC exposure summaries for the overall U.S. population and all 22 TAS population groups are shown in Table 2. The TMRC and ARC exposure summaries for the overall U.S. population, non-nursing infants, and children aged 1 to 6 are compared in the following table.

Ethion TMRC-ARC Exposure Summary

	<u>Overall U.S. Population</u>	<u>Non-Nurs. Infants</u>	<u>Children Aged 1 - 6</u>
TMRC	0.016696 ^a 3339.3 ^b	0.042388 8477.7	0.038054 7610.7
ARC	0.000567 113.3	0.000417 83.4	0.000551 147.8

^aEstimated exposure in mg/kg body weight/day.

^bExposure estimate expressed as a per cent of the PADI.

Ethion is registered for use on a relatively large number of crop commodities. The following table displays the exposure (ARC) summaries for selected commodity groups for the overall U.S. population, infants and children are shown in the following table.

Exposure (ARC) Summaries for Selected Commodities

	<u>Overall U.S. Population</u>	<u>Non-Nurs. Infants</u>	<u>Children Aged 1 - 6</u>
Tea	0.314695 ^a 62.9 ^b	0.106067 21.2	0.324388 64.9
Grains	0.105282 21.1	0.138776 27.8	0.142916 28.6
Meat	0.067485 13.5	0.041436 8.3	0.129371 25.9
Cucurbits	0.016884 3.4	0.002622 0.5	0.020479 4.1
Fruiting Vegetables	0.014023 2.8	0.004965 1.0	0.017162 3.4
Bulb Vegetables	0.009919 2.0	0.003666 0.7	0.016526 3.3
Stone Fruits	0.008789 1.8	0.062934 12.6	0.024185 4.8
Dairy	0.006868 1.4	0.014844 3.0	0.017293 3.5
Poultry	0.003038 0.6	0.006324 1.3	0.006186 1.2
Pome Fruits	0.002917 0.6	0.022333 4.5	0.007514 1.5
Legumes	0.002037 0.4	0.004963 1.0	0.003794 0.8
Citrus	0.001567 0.3	0.002823 0.6	0.003982 0.8
Small Fruits	0.001542 0.3	0.001555 0.3	0.004048 0.8
Nuts	0.001304 0.3	0.000554 0.1	0.002703 0.5

^aExposure estimate in ug/kg body weight/day.

^bEstimated exposure expressed as per cent of the PADI.

Exposure (ARC) Summaries for Selected Commodities

	<u>Overall U.S. Population</u>	<u>Non-Nurs. Infants</u>	<u>Children Aged 1 - 6</u>
Other ^c	0.010263 ^a 2.0 ^b	0.003033 0.6	0.018434 3.7
TOTAL	0.566613 113.3	0.416895 83.4	0.738981 147.8

^aExposure estimate in ug/kg body weight/day.

^bEstimated exposure expressed as a per cent of the PADI.

^cOther includes guar beans and cottonseed.

4. Acute Exposure Analysis: The TAS acute exposure analysis estimates the distribution of single-day exposure for the overall U.S. population and certain population subgroups. The analysis evaluates individual food consumption, as reported by respondents in the 1977-78 USDA Nationwide Food Consumption Survey (NFCS), and accumulates exposure to ethion for each food consumed for which an ethion residue value exists. Each analysis assumes that ethion residues are present at the anticipated residue levels described shown in Table 1b in the entire supply of that food commodity.

The exposure distribution is compared to the NOEL observed in the acute toxicity study. Margins of Safety (MOS) for the average consumer are calculated according to the following relationship (shown for the overall U.S. population):

$$\begin{aligned} \text{Average MOS} &= \text{NOEL} / \text{Exposure (ARC)} \\ &= 0.05 \text{ mg/kg} / 0.008219 \text{ mg/kg} \\ &= 6 \end{aligned}$$

As shown in the exposure distributions calculated from all commodities on which ethion may be used (Table 3), 45 per cent of the general population is expected to have an MOS less than 10 for ChE inhibition. The subgroup distributions show that 61 per cent of infants, 63 per cent of children aged 1 to 6, 40 per cent of adult females, and 41 per cent of adult males are estimated to have Margins of Safety for ChE inhibition less than 10. Ninety four per cent of infants are expected to consume at least 1 food on which ethion is registered; essentially every member of the overall population, children aged 1 to 6, adult females, and adult males are expected to consume at least one commodity which may have

ethion residues. The minimum MOS is less than 1 for each TAS population group.

Several assumptions regarding the TAS acute exposure analysis affect its interpretation. First, all foods on which ethion residues may exist that were consumed by a participant in the NFCS are assumed to be eaten at one meal. The food commodities that may contain ethion residues are relatively diverse: apples, dry beans, eggs, and melons, to name a few. If an individual consumed eggs and apple juice at breakfast, cantaloupe at lunch, and pinto beans at supper, his or her exposure would in reality occur over an extended period throughout the day. However, TAS assumes that the entire exposure occurs at one sitting.

Secondly, TAS assumes that the entire supply of commodities that may be treated with ethion do in fact contain ethion residues at the maximum levels observed in field studies. Although the available data are sparse, it is clear that residues lower than the maximum amount would occur in some samples of the commodity. This assumption, combined with the method TAS uses to accumulate daily exposure, leads to an overestimate of acute exposure.

In an attempt to provide more intelligible information regarding acute exposure to ethion, separate TAS acute analyses were conducted for specific food commodities and commodity groups. The results of these acute exposure analyses are shown in Table 4. The table shows the percentage of the population expected to consume at least one food which may contain ethion residues ("% Consumers"), the Margin of Safety for the average consumer of the commodities ("Avg. MOS"), the percentage of the population expected to have an MOS less than 10 ("% Cons. < 10"), and the minimum Margin of Safety expected for the population ("Min. MOS"). The residue data shown in Table 1b were assumed to be present in the entire commodity supply. For example, Table 4 gives a summary of exposure from grapes. Twenty seven per cent of the general population, 5 per cent of the infants, 35 per cent of the children aged 1 to 6, 24 per cent of the adult women, and 27 per cent of the adult men are expected to consume grapes or grape products each day. For those individuals who consume grapes or grape products, all the grapes, grape juice, wine, jam, jelly etc. is assumed to contain 3.3 ppm of ethion and all the raisins are assumed to contain 7.3 ppm of ethion.

Table 4 shows that acute exposure may result from consumption of a few specific products. The average Margin of Safety is in the hundreds to tens of thousands for grapefruit; apricots, cherries, and nectarines; eggs; grains; meats; nuts; and poultry. Moreover, no member of any of the TAS population groups is expected to have a MOS less than 10 because of ethion residues on any of these groups. By contrast, the minimum MOS for all five TAS population groups is less than 10 for apples and pears; grapes; melons; tomatoes; dry

beans; succulent beans; strawberries and citrus fruits other than oranges and grapefruit; and plums and prunes. In many instances, the average MOS for ChE inhibition is less than 10 for some of these commodities. Table 4 also reveals a middle group of exposure comprised of peaches; miscellaneous vegetables (cucumbers, squash, eggplant, peppers, bulb vegetables, and sweet corn); tea; and oranges for which the average MOS is generally greater than 10, but one or more population groups have a segment of the population estimated to have a MOS for ChE inhibition less than 10.

Because the data presented in Table 4 is the summary from a series of exposure distributions, it is not possible to simply add the Margins of Safety or the percentages of the population with an MOS less than 10 shown for each commodity group to calculate the Margins of Safety for the general population.

5. Comments: The use of anticipated residue data significantly reduced the exposure estimates for all TAS population groups as compared to the estimates obtained using tolerance value residues. Although exposure to ethion in the overall U.S. population and several TAS population groups is greater than the reference dose, a substantial proportion of the exposure may be traced back to the tolerance residue for tea. Residue data for brewing studies using tea leaves containing ethion residues would likely result in lowered exposure estimates for tea and would probably result in overall exposure estimates less than the reference dose for most subgroups.

In addition to the fact that the bulk of the exposure comes from tea, for which only tolerance data are available, the reference dose for ethion has an additional 10 fold factor incorporated into the uncertainty factor used to calculate the reference dose. The receipt and review of additional toxicology data may result in the deletion of the additional 10 fold factor. If such were the case, the portion of the reference dose represented by the exposure would also change.

The interpretation of the acute exposure analyses is more subtle than that of the chronic exposure analysis. As discussed previously, the TAS acute exposure analysis uses individual food consumption data to estimate individual daily exposure. This daily exposure is calculated from all the foods consumed by an individual for which ethion has a registered use. Pesticide residues do not occur uniformly in the commodity supply, but rather are distributed. However, because the data currently available to EPA does not permit a detailed understanding of the distribution of ethion residues in the various commodities.

As pointed out previously, there are eight commodity groups for which every TAS population group has a segment with a MOS for ChE inhibition less than 10. Of these, apples and pears; melons

(watermelon); tomatoes (except for juice); beans (dry and succulent); and strawberries (pooled with citrus other than orange and grapefruit) use tolerances or proposed tolerances to estimate the residue to be used in the acute exposure analysis. The possible implications of doing so are exemplified by melons (Table 4). On any given day, only 3 per cent of the population is expected to eat melon. However, of those who eat melons, 53 per cent are expected to have a MOS for ChE less than 10. The average MOS for melon consumers is only 6, and some members of the the population will have a MOS for ChE less than 1. But, we do not have anticipated residue data for watermelons but used the tolerance of 2 ppm in the acute exposure analysis.

Dietary Exposure Branch recommended that the maximum values from field trial studies be used in the acute exposure analyses. Although this leads to an overestimate of acute exposure, the compositing of samples and the paucity of the data available from FDA monitoring programs (C. Deyrup to A. B. Kocialski memo, 7/31/89) dictate the use of this protective approach. Although compositing of samples is adequate for evaluating possible toxic effects resulting from an extended of exposure, such techniques are inappropriate for evaluating exposure to pesticides for a relatively short time frame.

In summary, the use of ethion apparantly will not result in chronic health effects. This conclusion should be corroborated by a further analysis with residues in brewed tea. Moreover, there does not appear to be a health risk from short term exposure to ethion residues on grapefruit, stone fruits other than peaches and plums, eggs, grains, meat, nuts, or poultry. Short term exposure to ethion from residues on peaches, vegetables, tea, and oranges may result in ChE inhibition for selected TAS population, usually infants and children. Finally, inhibition of ChE may occur in all TAS population groups from short term exposure to ethion residues on apples and pears, melons, tomatoes, dry beans, succulent beans, strawberries and citrus other than oranges and grapefruit, and plums or prunes.

Attachments

cc: TAS, DEB, Caswell #427, Phang (TOX-IRB), Kocialski (SACB),
King (RRB/SRRD)

Table 1a

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 427 DATE: 08/02/89 PAGE: 1

CHEMICAL		STUDY TYPE		EFFECTS		REFERENCE DOSES		DATA GAPS/COMMENTS		STATUS	
ETHION	CASWELL #427	21d Human oral CHE	NOEL=	Decreased plasma CHE.	PADI UF -->100	Chronic feeding- dog.	HED complete	08/15/86.			
CAS No. 563-12-2	A.I. CODE: 058401	0.0500 mg/kg	0.00 ppm	Doses administered by capsule. IBT validated study. No evidence of oncogenicity in rats or mice.	OPP Rfd= 0.000500	90d dog is co-critical.	EPA verified	09/16/86.			
CFR No. 180.173	ONCO: Negative- 2 species	LEL=	0.0750 mg/kg		EPA Rtd= 0.000500	Brain CHE NOEL=0.06 mg/kg	HED reassess	04/19/89.			
			0.00 ppm		Additional UF of 10 to account for brain CHE in dog study.		EPA verified	05/17/89.			
							WHO last reviewed	1986.			
							On IRIS.				
FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)			
01014AA	GRAPES-FRESH	10 RAW-FRESH OR NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000			
01014AA	GRAPES-FRESH	21 COOKED-NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000			
01014AA	GRAPES-FRESH	31 COOKED-FRESH OR CANNED		P 2.000000	0.005000	MONITORING	100.00	0.005000			
01014DA	GRAPES-RAISINS	10 RAW-FRESH OR NFS		P 4.000000	0.011000C	MONITORING	100.00	0.011000			
01014DA	GRAPES-RAISINS	21 COOKED-NFS		P 4.000000	0.011000C	MONITORING	100.00	0.011000			
01014DA	GRAPES-RAISINS	22 COOKED-FRESH-BAKED		P 4.000000	0.011000C	MONITORING	100.00	0.011000			
01014JA	GRAPES-JUICE	10 RAW-FRESH OR NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000			
01014JA	GRAPES-JUICE	15 RAW-FRESH OR CANNED		P 2.000000	0.005000	MONITORING	100.00	0.005000			
01014JA	GRAPES-JUICE	21 COOKED-NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000			
01016AA	STRAWBERRIES	10 RAW-FRESH OR NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
01016AA	STRAWBERRIES	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
01016AA	STRAWBERRIES	70 RAW-FROZEN	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
02001AA	CITRUS CITRON	22 COOKED-FRESH-BAKED	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02002AA	GRAPEFRUIT-UNSP	00 NOT SPECIFIED	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02002AB	GRAPEFRUIT-PULP	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02002AB	GRAPEFRUIT-PULP	21 COOKED-NFS	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02002JA	GRAPEFRUIT-JUICE	15 RAW-FRESH OR CANNED	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02002JA	GRAPEFRUIT-JUICE	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02003AA	KUMQUATS	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004AA	LEMONS-UNSPEC	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004AA	LEMONS-UNSPEC	22 COOKED-FRESH-BAKED	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004AB	LEMONS-PULP	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004AB	LEMONS-PULP	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004HA	LEMONS-PEEL	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004HA	LEMONS-PEEL	21 COOKED-NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004JA	LEMONS-JUICE	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004JA	LEMONS-JUICE	15 RAW-FRESH OR CANNED	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02004JA	LEMONS-JUICE	21 COOKED-NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02005AA	LIMES-UNSPEC	00 NOT SPECIFIED	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02005AB	LIMES-PULP	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02005HA	LIMES-PEEL	21 COOKED-NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02005JA	LIMES-JUICE	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02005JA	LIMES-JUICE	15 RAW-FRESH OR CANNED	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02005JA	LIMES-JUICE	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.001000	MONITORING	100.00	0.001000			
02006AA	ORANGES-UNSPEC	00 NOT SPECIFIED	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02006AB	ORANGES-PULP	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02006HA	ORANGES-PEEL	21 COOKED-NFS	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			
02006HA	ORANGES-PEEL	22 COOKED-FRESH BAKED	316	P 2.000000	0.001000C	MONITORING	100.00	0.001000			

Table 1a; continued

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 427

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES		DATA CAPS/COMMENTS	STATUS
			IPADI UF -->100	OPP RfD= 0.000500		
Ethion	21d Human oral ChE	Decreased plasma ChE.			Chronic feeding- dog.	HED complete 08/15/86.
Caswell #427	NOEL= 0.0500 mg/kg	Doses administered by capsule. IBT validated study. No evidence of oncogenicity in rats or mice.			90d dog is co-critical; Brain ChE NOEL=0.06 mg/kg	EPA verified 09/16/86.
CAS No. 563-12-2	LEL= 0.0750 mg/kg				Additional UF of 10 to account for brain ChE in dog study.	HED reassess 04/19/89.
A. I. CODE: 058401						EPA verified 05/17/89.
CFR No. 180.173	ONCO: Negative- 2 species					WHO last reviewed 1986.

FOOD CODE	FOOD	FOOD FORM	PET. #	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
02006HA	ORANGES-PEEL	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.300000C MONITORING		100.00	0.300000
02006JA	ORANGES-JUICE	15 RAW-FRESH OR CANNED	316	P 2.000000	0.001000C MONITORING		100.00	0.001000
02006JA	ORANGES-JUICE	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.001000C MONITORING		100.00	0.001000
02007AA	TANGELOS	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000 MONITORING		100.00	0.001000
02008AA	TANGERINES	10 RAW-FRESH OR NFS	316	P 2.000000	0.001000 MONITORING		100.00	0.001000
02008JA	TANGERINE-JUICE	15 RAW-FRESH OR CANNED	316	P 2.000000	0.001000 MONITORING		100.00	0.001000
03001AA	ALMONDS	10 RAW-FRESH OR NFS	308	P 0.100000	0.100000 MONITORING		100.00	0.100000
03001AA	ALMONDS	21 COOKED-NFS	308	P 0.100000	0.100000		100.00	0.100000
03001AA	ALMONDS	22 COOKED-FRESH-BAKED	308	P 0.100000	0.100000		100.00	0.100000
03004AA	CHESTNUTS	21 COOKED-NFS	308	P 0.100000	0.100000		100.00	0.100000
03005AA	FILBERTS	10 RAW-FRESH OR NFS		P 0.100000	0.100000		100.00	0.100000
03005AA	FILBERTS	21 COOKED-NFS		P 0.100000	0.100000		100.00	0.100000
03005AA	FILBERTS	22 COOKED-FRESH-BAKED		P 0.100000	0.100000		100.00	0.100000
03008AA	PECANS	10 RAW-FRESH OR NFS		P 0.100000	0.100000		100.00	0.100000
03008AA	PECANS	21 COOKED-NFS		P 0.100000	0.100000		100.00	0.100000
03008AA	PECANS	22 COOKED-FRESH-BAKED		P 0.100000	0.100000		100.00	0.100000
03008AA	PECANS	23 COOKED-FRESH-BOILED		P 0.100000	0.100000		100.00	0.100000
03008AA	PECANS	62 COOKED-FRESH OR FROZEN-BAKED		P 0.100000	0.100000		100.00	0.100000
03009AA	WALNUTS	10 RAW-FRESH OR NFS		P 0.100000	0.100000		100.00	0.100000
03009AA	WALNUTS	21 COOKED-NFS		P 0.100000	0.100000		100.00	0.100000
03009AA	WALNUTS	22 COOKED-FRESH-BAKED		P 0.100000	0.100000		100.00	0.100000
04001AA	APPLES-FRESH	10 RAW-FRESH OR NFS		P 2.000000	0.005000 MONITORING		100.00	0.005000
04001AA	APPLES-FRESH	21 COOKED-NFS		P 2.000000	0.005000 MONITORING		100.00	0.005000
04001AA	APPLES-FRESH	31 COOKED-FRESH OR CANNED		P 2.000000	0.005000 MONITORING		100.00	0.005000
04001AA	APPLES-FRESH	62 COOKED-FRESH OR FROZEN-BAKED		P 2.000000	0.005000 MONITORING		100.00	0.005000
04001DA	APPLES-DRIED	10 RAW-FRESH OR NFS		P 2.000000	0.005000 MONITORING		100.00	0.005000
04001DA	APPLES-DRIED	22 COOKED-FRESH-BAKED		P 2.000000	0.005000 MONITORING		100.00	0.005000
04001DA	APPLES-DRIED	62 COOKED-FRESH OR FROZEN-BAKED		P 2.000000	0.005000 MONITORING		100.00	0.005000
04001JA	APPLES-JUICE	15 RAW-FRESH OR CANNED		P 2.000000	0.000500C MONITORING		100.00	0.000500
04001JA	APPLES-JUICE	31 COOKED-FRESH OR CANNED		P 2.000000	0.000500C MONITORING		100.00	0.000500
04003AA	PEARS-FRESH	10 RAW-FRESH OR NFS	246	P 2.000000	0.005000 MONITORING		100.00	0.005000
04003AA	PEARS-FRESH	31 COOKED-FRESH OR CANNED	246	P 2.000000	0.005000 MONITORING		100.00	0.005000
04003AA	PEARS-FRESH	51 COOKED-CANNED	246	P 2.000000	0.005000 MONITORING		100.00	0.005000
04003AA	PEARS-FRESH	62 COOKED-FRESH OR FROZEN-BAKED	246	P 2.000000	0.005000 MONITORING		100.00	0.005000
04003DA	PEARS-DRIED	10 RAW-FRESH OR NFS	246	P 2.000000	0.005000 MONITORING		100.00	0.005000
04003DA	PEARS-DRIED	21 COOKED-NFS	246	P 2.000000	0.005000 MONITORING		100.00	0.005000
05001AA	APRICOTS-FRESH	10 RAW-FRESH OR NFS		P 0.100000	0.100000		100.00	0.100000
05001AA	APRICOTS-FRESH	21 COOKED-NFS		P 0.100000	0.100000		100.00	0.100000
05001AA	APRICOTS-FRESH	31 COOKED-FRESH OR CANNED		P 0.100000	0.100000		100.00	0.100000
05001DA	APRICOTS-DRIED	10 RAW-FRESH OR NFS		P 0.100000	0.100000		100.00	0.100000

Table 1a, continued

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 427

DATE: 08/02/89

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FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE		EFFECTS	REFERENCE DOSES		DATA CAPS/COMMENTS		STATUS	
				(ppm)	(ppm)		PADI UF -->100	Opp RfD= 0.000500	EPA RfD= 0.000500	Chronic feeding- day		90d day is co-critical
												RES. VALUE USED IN TAS RUN (ppm)
05001DA	APRICOTS-DRIED	22 COOKED-FRESH-BAKED		P 0.100000	0.100000							0.100000
05002AA	CHERRIES-FRESH	10 RAW-FRESH OR NFS	0F0918	P 0.100000	0.100000	Decreased plasma CHE.						0.100000
05002AA	CHERRIES-FRESH	21 COOKED-NFS	0F0918	P 0.100000	0.100000	Doses administered by capsule. IBT validated study. No evidence of oncogenicity in rats or mice.						0.100000
05002AA	CHERRIES-FRESH	31 COOKED-FRESH OR CANNED	0F0918	P 0.100000	0.100000							0.100000
05002AA	CHERRIES-FRESH	62 COOKED-FRESH OR FROZEN-BAKED	0F0918	P 0.100000	0.100000							0.100000
05002DA	CHERRIES-DRIED	00 NOT SPECIFIED	0F0918	P 0.100000	0.100000							0.100000
05002JA	CHERRIES-JUICE	15 RAW-FRESH OR CANNED	0F0918	P 0.100000	0.100000							0.100000
05002JA	CHERRIES-JUICE	21 COOKED-NFS	0F0918	P 0.100000	0.100000							0.100000
05003AA	NECTARINES	10 RAW-FRESH OR NFS	246	P 1.000000	0.005000							0.100000
05004AA	PEACHES-FRESH	10 RAW-FRESH OR NFS	246	P 1.000000	0.005000							0.005000
05004AA	PEACHES-FRESH	21 COOKED-NFS	246	P 1.000000	0.005000							0.005000
05004AA	PEACHES-FRESH	31 COOKED-FRESH OR CANNED	246	P 1.000000	0.005000							0.005000
05004AA	PEACHES-FRESH	51 COOKED-CANNED	246	P 1.000000	0.005000							0.005000
05004DA	PEACHES-DRIED	10 RAW-FRESH OR NFS	246	P 1.000000	0.005000							0.005000
05004DA	PEACHES-DRIED	21 COOKED-NFS	246	P 1.000000	0.005000							0.005000
05005AA	PLUMS-FRESH	10 RAW-FRESH OR NFS		P 2.000000	0.005000							0.005000
05005AA	PLUMS-FRESH	31 COOKED-FRESH OR CANNED		P 2.000000	0.005000							0.005000
05005DA	PLUMS-PRUNES	10 RAW-FRESH OR NFS		P 2.000000	0.005000							0.005000
05005DA	PLUMS-PRUNES	21 COOKED-NFS		P 2.000000	0.005000							0.005000
05005DA	PLUMS-PRUNES	31 COOKED-FRESH OR CANNED		P 2.000000	0.005000							0.005000
05005JA	PRUNE-JUICE	10 RAW-FRESH OR NFS		P 2.000000	0.005000							0.005000
05005JA	PRUNE-JUICE	62 COOKED-FRESH OR FROZEN-BAKED		P 2.000000	0.005000							0.005000
07003AA	TEA	21 COOKED-NFS		P 10.000000	10.0000000							10.000000
10002AA	CANTALOUPE-UNSP	00 NOT SPECIFIED		P 0.005000	0.005000							0.005000
10002AB	CANTALOUPE-PULP	10 RAW-FRESH OR NFS		P 2.000000	0.005000							0.005000
10002AB	CANTALOUPE-PULP	21 COOKED-NFS		P 2.000000	0.005000							0.005000
10003AA	CASABAS	10 RAW-FRESH OR NFS		P 2.000000	0.005000							0.005000
10004AA	CRENSHAW	00 NOT SPECIFIED		P 2.000000	0.005000							0.005000
10005AA	HONEYDEW MELONS	10 RAW-FRESH OR NFS		P 2.000000	0.005000							0.005000
10007AA	PERSIMON MELONS	00 NOT SPECIFIED		P 2.000000	0.005000							0.005000
10008AA	WATERMELON	10 RAW-FRESH OR NFS		P 2.000000	0.005000							0.005000
10008AA	WATERMELON	21 COOKED-NFS		P 2.000000	0.005000							0.005000
10010AA	CUCUMBERS	11 RAW-FRESH OR NFS		P 0.500000	0.005000							0.005000
10010AA	CUCUMBERS	21 COOKED-NFS		P 0.500000	0.005000							0.005000
10010AA	CUCUMBERS	10 RAW-FRESH- PICKLED, CORNED, OR CURED		P 0.500000	0.005000							0.005000
10013AA	SQUASH-SUMMER	10 RAW-FRESH OR NFS		P 0.500000	0.005000							0.005000
10013AA	SQUASH-SUMMER	21 COOKED-NFS		P 0.500000	0.005000							0.005000
11001AA	EGGPLANT	10 RAW-FRESH OR NFS	308	P 1.000000	1.000000							1.000000
11001AA	EGGPLANT	21 COOKED-NFS	308	P 1.000000	1.000000							1.000000
11001AA	EGGPLANT	25 COOKED-FRESH-FRIED	308	P 1.000000	1.000000							1.000000

Table 1a, continued

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 127

DATE: 08/02/89

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CHEMICAL		STUDY TYPE		EFFECTS		REFERENCE DOSES		DATA GAPS/COMMENTS		STATUS	
Ethion	Caswell #427	21d Human oral CHE	Decreased plasma CHE	IPADI UF -->100	Chronic feeding - dog	HED complete 08/15/86.					
	CAS No. 563-12-2	NOEL - 0.0500 mg/kg	Doses administered by capsule. IBT validated	OPP RfD= 0.000500	90d dog is co-critical	EPA verified 09/16/86					
	A. I. CODE: 058401	LEL= 0.0750 mg/kg	study. No evidence of oncogenicity in rats or mice	EPA RfD= 0.000500	Brain CHE NOEL=0.06 mg/kg	HED reassess 04/19/89.					
	CFR No. 180.173	ONCO: Negative - 2 species			Additional UF of 10 to account for brain CHE in dog study	EPA verified 05/17/89.					
						WHO last reviewed 1986.					
						On IRIS					

FOOD CODE	FOOD	FOOD FORM	PET. #	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
11003AA	PEPPERS, SWEET	10 RAW-FRESH OR NFS	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11003AA	PEPPERS, SWEET	21 COOKED-NFS	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11003AB	CHILLI PEPPERS	00 NOT SPECIFIED	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11003AD	PEPPERS-OTHER	10 RAW-FRESH OR NFS	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11003AD	PEPPERS-OTHER	21 COOKED-NFS	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11003AD	PEPPERS-OTHER	51 COOKED-CANNED	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11004AA	PIMIENTOS	10 RAW-FRESH OR NFS	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11004AA	PIMIENTOS	21 COOKED-NFS	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11004AA	PIMIENTOS	31 COOKED-FRESH OR CANNED	308	P 1.000000	0.030000	MONITORING	100.00	0.030000
11005AA	TOMATOES-WHOLE	10 RAW-FRESH OR NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005AA	TOMATOES-WHOLE	21 COOKED-NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005AA	TOMATOES-WHOLE	31 COOKED-FRESH OR CANNED		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005JA	TOMATOES-JUICE	10 RAW-FRESH OR NFS		P 2.000000	0.002000	MONITORING	100.00	0.002000
11005JA	TOMATOES-JUICE	21 COOKED-NFS		P 2.000000	0.002000	MONITORING	100.00	0.002000
11005RA	TOMATOES-PUREE	10 RAW-FRESH OR NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005RA	TOMATOES-PUREE	21 COOKED-NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005RA	TOMATOES-PUREE	31 COOKED-FRESH OR CANNED		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005RA	TOMATOES-PUREE	32 COOKED-FRESH OR CANNED-BAKED		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005RA	TOMATOES-PUREE	51 COOKED-CANNED		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005TA	TOMATOES-PASTE	21 COOKED-NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005TA	TOMATOES-PASTE	31 COOKED-FRESH-BAKED		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005TA	TOMATOES-PASTE	31 COOKED-FRESH OR CANNED		P 2.000000	0.005000	MONITORING	100.00	0.005000
11005UA	TOMATOES-CATSUP	21 COOKED-NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
14007AA	GARLIC	10 RAW-FRESH OR NFS		P 1.000000	0.090000	MONITORING	100.00	0.090000
14007AA	GARLIC	21 COOKED-NFS	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
14007AA	GARLIC	32 COOKED-FRESH OR CANNED-BAKED	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
14010AA	LEEK	31 COOKED-FRESH OR CANNED	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
14011AA	ONIONS-DRY-BULB	10 RAW-FRESH OR NFS		P 1.000000	0.090000	MONITORING	100.00	0.090000
14011AA	ONIONS-DRY-BULB	21 COOKED-NFS	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
14011AA	ONIONS-DRY-BULB	22 COOKED-FRESH-BAKED	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
14011AA	ONIONS-DRY-BULB	31 COOKED-FRESH OR CANNED	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
14011DA	ONIONS-DRIED	12 RAW-FRESH DRIED	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
14017AA	SHALLOTS	00 NOT SPECIFIED	214	P 1.000000	0.090000	MONITORING	100.00	0.090000
15001AA	BEANS-DRY-GRN NO	00 NOT SPECIFIED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000
15001AB	BEANS-DRY-KIDNEY	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000
15001AB	BEANS-DRY-KIDNEY	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000
15001AC	BEANS-DRY-LIMA	21 COOKED NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000
15001AD	BEANS-DRY-NAVY	31 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000
15001AD	BEANS-DRY-NAVY	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000
15001AE	BEANS-DRY-OTHER	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000

Table 1a, continued

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 427

DATE: 03/02/89

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Ethion Caswell #427 CAS No. 563-12-2 A.I. CODE: 058401 CFR No. 180.173	CHEMICAL		STUDY TYPE		EFFECTS		REFERENCE DOSES		DATA CAPS/COMMENTS		STATUS
	21d Human oral ChE	NOEL- 0.0500 mg/kg 0.00 ppm	LEL- 0.0750 mg/kg 0.00 ppm	ONCO: Negative- 2 species	Decreased plasma ChE. Doses administered by capsule. IBT validated study. No evidence of oncogenicity in rats or mice.	IPADI UF -->100	OPP RED= 0.000500	EPA RED= 0.000500	Chronic feeding- 1 day. 90d day is co-critical. Brain ChE NOEL=0.06 mg/kg Additional UF of 10 to account for brain ChE in dog study	HED complete 08/15/86 EPA verified 09/16/86 HED reassess 04/19/89 EPA verified 05/17/89. WHO last reviewed 1986. On IRIS.	
FOOD CODE	FOOD	FOOD FORM	PET. #	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)			
15001AE	BEANS-DRY-OTHER	25 COOKED-FRESH-FRIED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15001AE	BEANS-DRY-OTHER	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15001AF	BEANS-DRY-PINTO	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15002AA	BEANS-SUCC-LIMA	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15002AA	BEANS-SUCC-LIMA	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15003AA	BEANS-SUCC-GREEN	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15003AB	BEANS-SUCC-OTH	10 RAW-FRESH OR NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15003AB	BEANS-SUCC-OTH	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15003AC	BEANS-SUCC-WAX	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15004AA	CORN, POP	21 COOKED-NFS	1F1104	P 0.100000	0.100000		100.00	0.005000			
15005AA	CORN, SWEET	10 RAW-FRESH OR NFS	1F1104	P 0.100000	0.100000		100.00	0.100000			
15005AA	CORN, SWEET	21 COOKED-NFS	1F1104	P 0.100000	0.100000		100.00	0.100000			
15005AA	CORN, SWEET	31 COOKED-FRESH OR CANNED	1F1104	P 0.100000	0.100000		100.00	0.100000			
15013AA	MUNG BEANS	10 RAW-FRESH OR NFS	1F1104	P 0.100000	0.100000		100.00	0.100000			
15013AA	MUNG BEANS	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.100000			
15022AA	BEANS-DRY-BROAD	00 NOT SPECIFIED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15022AB	BEANS-SUCC-BROAD	00 NOT SPECIFIED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15023AA	BEANS-DRY-PIGEON	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15027AA	BEANS-UNSPEC	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15030AA	BEANS-DRY-HYAC	00 NOT SPECIFIED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15030AB	BEANS-SUCC-HYAC	00 NOT SPECIFIED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15031AA	BLKEYE PEAS-DRY	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15032AA	BEANS-DRY	21 COOKED-NFS	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
15032AA	BEANS-DRY	31 COOKED-FRESH OR CANNED	316	P 2.000000	0.005000	MONITORING	100.00	0.005000			
16004AA	ONIONS-GREEN	10 RAW-FRESH OR NFS	214	P 1.000000	0.005000	MONITORING	100.00	0.005000			
16004AA	ONIONS-GREEN	21 COOKED-NFS	214	P 1.000000	0.090000	MONITORING	100.00	0.005000			
16004AA	ONIONS-GREEN	25 COOKED-FRESH-FRIED	214	P 1.000000	0.090000	MONITORING	100.00	0.090000			
24002EA	CORN, GRAIN-ENDO	10 RAW-FRESH OR NFS	1F1104	P 0.100000	0.100000		100.00	0.090000			
24002EA	CORN, GRAIN-ENDO	21 COOKED-NFS	1F1104	P 0.100000	0.100000		100.00	0.100000			
24002EA	CORN, GRAIN-ENDO	22 COOKED-FRESH-BAKED	1F1104	P 0.100000	0.100000		100.00	0.100000			
24002EA	CORN, GRAIN-ENDO	23 COOKED-FRESH-BOILED	1F1104	P 0.100000	0.100000		100.00	0.100000			
24002HA	CORN, GRAIN-BRAN	00 NOT SPECIFIED	1F1104	P 0.100000	0.100000		100.00	0.100000			
24002SA	CORN SUGAR	10 RAW-FRESH OR NFS	1F1104	P 0.100000	0.100000		100.00	0.100000			
24002SA	CORN SUGAR	21 COOKED-FRESH-BAKED	1F1104	P 0.100000	0.100000		100.00	0.100000			
24006AA	SORGHUM	00 NOT SPECIFIED	316	P 2.000000	2.000000	MONITORING	100.00	0.100000			
27001AA	GUAR BEANS	00 NOT SPECIFIED	1F1104	P 0.100000	0.005000		100.00	2.000000			
27002AA	CORN, GRAIN-OIL	18 PROCESSED OIL	0F0920	P 0.500000	0.500000		100.00	0.005000			
27003AA	COTTONSEED-OIL	18 PROCESSED OIL	0F0920	P 0.500000	0.500000		100.00	0.100000			
27004AA	COTTONSEED MEAL	18 PROCESSED OIL	0F0920	P 0.500000	0.500000		100.00	0.500000			

Table 1a, continued

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 427

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DATE: 08/02/89

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES		DATA GAPS/COMMENTS	STATUS
			PADI	UF		
Ethion	21d Human oral ChE	Decreased plasma ChE	0.0500	-->100	Chronic feeding-dog	IHD complete 08/15/86
Caswell #427	NOEL=	Doses administered by capsule. IBF validated study. No evidence of oncogenicity in rats or mice.	0.0500 mg/kg	0.000500	90d dog is subcritical	EPA verified 09/16/86
CAS No. 563-12-2	0.00 ppm		0.0750 mg/kg	0.000500	Brain ChE NOEL=0.06 mg/kg	EPA reassess 04/19/89
A.I. CODE: 058401	LEL=		0.00 ppm		Additional UF of 10 to account for brain ChE in dog study	EPA verified 05/17/89
CPR No. 180.173	ONCO: Negative- 2 species					WHO last reviewed 1986.

FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
43058AA	WINE AND SHERRY	10 RAW-FRESH OR NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
43058AA	WINE AND SHERRY	21 COOKED-NFS		P 2.000000	0.005000	MONITORING	100.00	0.005000
50000FA	MILK-FAT SOLIDS	10 RAW-FRESH OR NFS	0F0920	P 0.500000	0.001000	MONITORING	100.00	0.001000
50000FA	MILK-FAT SOLIDS	21 COOKED-NFS	0F0920	P 0.500000	0.001000	MONITORING	100.00	0.001000
50000FA	MILK-FAT SOLIDS	51 COOKED-CANNED	0F0920	P 0.500000	0.001000	MONITORING	100.00	0.001000
53001BA	BEEF-MEAT BYP	21 COOKED-NFS	0F0920	P 1.000000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001BA	BEEF-MEAT BYP	26 COOKED-FRESH-PICKLED, CORNED, OR CURED	0F0920	P 1.000000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001BB	BEEF-OTH ORGAN	21 COOKED-NFS	0F0920	P 1.000000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001FA	BEEF-FAT	51 COOKED-CANNED	0F0920	P 1.000000	0.002000	EXTRAP FEEDING	100.00	0.002000
53001FA	BEEF-FAT	10 RAW-FRESH OR NFS	0F0920	P 1.000000	0.002000	EXTRAP FEEDING	100.00	0.002000
53001FA	BEEF-FAT	21 COOKED-NFS	0F0920	P 2.500000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001FA	BEEF-FAT	22 COOKED-FRESH-BAKED	0F0920	P 2.500000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001FA	BEEF-FAT	23 COOKED-FRESH-BOILED	0F0920	P 2.500000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001FA	BEEF-FAT	24 COOKED-FRESH-BOILED	0F0920	P 2.500000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001FA	BEEF-FAT	25 COOKED-FRESH-FRIED	0F0920	P 2.500000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001KA	BEEF-KIDNEY	21 COOKED-NFS	0F0920	P 2.500000	0.100000	EXTRAP FEEDING	100.00	0.100000
53001LA	BEEF-LIVER	25 COOKED-FRESH-FRIED	0F0920	P 1.000000	0.002000	EXTRAP FEEDING	100.00	0.002000
53001LA	BEEF-LIVER	31 COOKED-FRESH OR CANNED	0F0920	P 1.000000	0.001000	EXTRAP FEEDING	100.00	0.001000
53001MA	BEEF-LEAN	10 RAW-FRESH OR NFS	0F0920	P 1.000000	0.003000	EXTRAP FEEDING	100.00	0.003000
53001MA	BEEF-LEAN	21 COOKED-NFS	0F0920	P 2.500000	0.003000	EXTRAP FEEDING	100.00	0.003000
53001MA	BEEF-LEAN	22 COOKED-FRESH-BAKED	0F0920	P 2.500000	0.003000	EXTRAP FEEDING	100.00	0.003000
53001MA	BEEF-LEAN	23 COOKED-FRESH-BOILED	0F0920	P 2.500000	0.003000	EXTRAP FEEDING	100.00	0.003000
53001MA	BEEF-LEAN	24 COOKED-FRESH-BOILED	0F0920	P 2.500000	0.003000	EXTRAP FEEDING	100.00	0.003000
53002BA	GOAT-MEAT BYP	00 NOT SPECIFIED	0F0920	P 0.200000	0.003000	EXTRAP FEEDING	100.00	0.003000
53002BB	GOAT-OTH ORGAN	00 NOT SPECIFIED	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000
53002FA	GOAT-FAT	23 COOKED-FRESH-BOILED	0F0920	P 0.200000	0.002000	EXTRAP FEEDING	100.00	0.002000
53002FA	GOAT-FAT	25 COOKED-FRESH-FRIED	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000
53002KA	GOAT-KIDNEY	00 NOT SPECIFIED	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000
53002LA	GOAT-LIVER	00 NOT SPECIFIED	0F0920	P 0.200000	0.002000	EXTRAP FEEDING	100.00	0.002000
53002MA	GOAT-LEAN	23 COOKED-FRESH-BOILED	0F0920	P 0.200000	0.001000	EXTRAP FEEDING	100.00	0.001000
53002MA	GOAT-LEAN	25 COOKED-FRESH-FRIED	0F0920	P 0.200000	0.003000	EXTRAP FEEDING	100.00	0.003000
53003AA	HORSE	00 NOT SPECIFIED	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000
53005BA	SHEEP-MEAT BYP	21 COOKED-NFS	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000
53005BB	SHEEP-OTH ORGAN	21 COOKED-NFS	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000
53005FA	SHEEP-FAT	21 COOKED-NFS	0F0920	P 0.200000	0.002000	EXTRAP FEEDING	100.00	0.002000
53005KA	SHEEP-KIDNEY	21 COOKED NFS	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000
53005LA	SHEEP-LIVER	00 NOT SPECIFIED	0F0920	P 0.200000	0.002000	EXTRAP FEEDING	100.00	0.002000
53005MA	SHEEP-LEAN	21 COOKED-NFS	0F0920	P 0.200000	0.003000	EXTRAP FEEDING	100.00	0.003000
53006BA	PORK MEAT BYP	31 COOKED-FRESH OR CANNED	0F0920	P 0.200000	0.003000	EXTRAP FEEDING	100.00	0.003000
53006BA	PORK MEAT BYP	21 COOKED-NFS	0F0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000

Table 1a, continued

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 427

DATE: 08/02/99

PAGE: 7

CHEMICAL		STUDY TYPE		EFFECTS		REFERENCE DOSES		DATA GAPS/COMMENTS		STATUS	
Ethion	Caswell #427	21d Human oral ChE	Decreased plasma ChE.	OPAD UF -->100	Chronic feeding- dog.	HED complete 08/15/86.					
	CAS No. 563-12-2	NOEL= 0.0500 mg/kg	Doses administered by capsule. IBT validated	OPP RfD= 0.000500	90d dog is co-critical.	EPA verified 09/16/86.					
	A.I. CODE: 058401	LEL= 0.0750 mg/kg	study. No evidence of oncogenicity in rats or mice.	EPA RfD= 0.000500	Brain ChE NOEL=0.06 mg/kg	HED reassess 04/19/89.					
	CFR No. 180.173	ONCO: Negative- 2 species			Additional UF of 10 to account for brain ChE in dog study.	EPA verified 05/17/89.					
						WHO last reviewed 1986.					
						On IRIS.					
FOOD CODE	FOOD	FOOD FORM	PET. #	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)			
53006BB	PORK-OTH ORGAN	21 COOKED-NFS	OF0920	P 0.200000	0.002000	EXTRAP FEEDING	100.00	0.002000			
53006BB	PORK-OTH ORGAN	26 COOKED-FRESH-PICKLED, CORNED, OR CURED	OF0920	P 0.200000	0.002000	EXTRAP FEEDING	100.00	0.002000			
53006FA	PORK-FAT	10 RAW-FRESH OR NFS	OF0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000			
53006FA	PORK-FAT	21 COOKED-NFS	OF0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000			
53006FA	PORK-FAT	23 COOKED-FRESH-BOILED	OF0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000			
53006FA	PORK-FAT	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000			
53006FA	PORK-FAT	26 COOKED-FRESH-PICKLED, CORNED, OR CURED	OF0920	P 0.200000	0.100000	EXTRAP FEEDING	100.00	0.100000			
53006KA	PORK-KIDNEY	21 COOKED-NFS	OF0920	P 0.200000	0.002000	EXTRAP FEEDING	100.00	0.002000			
53006LA	PORK-LIVER	21 COOKED-NFS	OF0920	P 0.200000	0.001000	EXTRAP FEEDING	100.00	0.001000			
53006LA	PORK-LIVER	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.001000	EXTRAP FEEDING	100.00	0.001000			
53006MA	PORK-LEAN	21 COOKED-NFS	OF0920	P 0.200000	0.003000	EXTRAP FEEDING	100.00	0.003000			
53006MA	PORK-LEAN	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.003000	EXTRAP FEEDING	100.00	0.003000			
53006MA	PORK-LEAN	26 COOKED-FRESH-PICKLED, CORNED, OR CURED	OF0920	P 0.200000	0.003000	EXTRAP FEEDING	100.00	0.003000			
55008BA	TURKEY-BYP	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008BA	TURKEY-BYP	26 COOKED-FRESH-PICKLED, CORNED, OR CURED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008LA	TURKEY ORGAN	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008LA	TURKEY ORGAN	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008MA	TURKEY W/O SKIN	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008MA	TURKEY W/O SKIN	31 COOKED-FRESH OR CANNED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008MA	TURKEY W/O SKIN	62 COOKED-FRESH OR FROZEN-BAKED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008MB	TURKEY+SKIN	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008MB	TURKEY+SKIN	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55008MC	TURKEY-UNSPEC	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55013BA	POULTRY, OTH-BYP	00 NOT SPECIFIED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55013LA	POULTRY, ORGAN	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55013MA	POULTRY, OTHER	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AA	EGGS-WHOLE	10 RAW-FRESH OR NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AA	EGGS-WHOLE	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AA	EGGS-WHOLE	22 COOKED-FRESH-BAKED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AA	EGGS-WHOLE	23 COOKED-FRESH-BOILED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AA	EGGS-WHOLE	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AB	EGGS-WHITE ONLY	10 RAW-FRESH OR NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AB	EGGS-WHITE ONLY	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AB	EGGS-WHITE ONLY	22 COOKED-FRESH-BAKED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AB	EGGS-WHITE ONLY	62 COOKED-FRESH OR FROZEN-BAKED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AB	EGGS-WHITE ONLY	81 COOKED-FROZEN	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AC	EGGS-YOLK ONLY	10 RAW-FRESH OR NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AC	EGGS-YOLK ONLY	21 COOKED-NFS	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AC	EGGS-YOLK ONLY	25 COOKED-FRESH-FRIED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			
55014AC	EGGS-YOLK ONLY	31 COOKED-FRESH OR CANNED	OF0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000			

Table 1a, continued

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 427

DATE: 08/02/89

PAGE: 8

CHEMICAL	STUDY TYPE		EFFECTS	REFERENCE DOSES		DATA CAPS COMMENTS		STATUS
	21d Human oral CHE	NOEL-		IPADI UF -->100	Chronic feeding - dog	HED complete 08/15/86.		
Ethion	0.0500 mg/kg	0.00 ppm	Decreased plasma CHE.	OPP RfD= 0.000500	90d dog is co-critical.	EPA verified 09/16/86.		
Caswell #427	0.0750 mg/kg	0.00 ppm	Doses administered by capsule. IBT validated study. No evidence of oncogenicity in rats or mice.	EPA RfD= 0.000500	Brain CHE NOEL=0.06 mg/kg	EPA verified 04/19/89.		
CAS No. 563-12-2	0.00 ppm	0.00 ppm			Additional UF of 10 to account for brain CHE in dog study.	EPA verified 05/17/89.		
A.I. CODE: 058401							WHO last reviewed 1986.	
CFR No. 180.173							On IRIS.	

FOOD CODE	FOOD	FOOD FORM	PET. #	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CRUP TREATED	RES. VALUE USED IN TAS RUN (ppm)
55015BA	CHICKEN-BYP	00 NOT SPECIFIED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015LA	CHICKEN-ORGAN	21 COOKED-NFS	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015LA	CHICKEN-ORGAN	25 COOKED-FRESH-FRIED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015LA	CHICKEN-ORGAN	26 COOKED-FRESH-PICKLED, CORNED, OR CURED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015MA	CHICKEN-W/O SKIN	21 COOKED-NFS	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015MA	CHICKEN-W/O SKIN	22 COOKED-FRESH-BAKED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015MA	CHICKEN-W/O SKIN	25 COOKED-FRESH-FRIED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015MA	CHICKEN-W/O SKIN	31 COOKED-FRESH OR CANNED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015MA	CHICKEN-W/O SKIN	53 COOKED-CANNED-BOILED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015MB	CHICKEN+SKIN	21 COOKED-NFS	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000
55015MB	CHICKEN+SKIN	25 COOKED-FRESH-FRIED	0F0920	P 0.200000	0.006000	EXTRAP FEEDING	100.00	0.006000

Table 1b: Residue Values Used in the Ethion
Acute Exposure Analysis

Food Code	Residue	Description
01014AA10	3.3000	GRAPES-FRESH
01014DA10	7.3000	GRAPES-RAISINS
01014JA10	3.3000	GRAPES-JUICE
01016AA10	2.0000	STRAWBERRIES
02001AA22	0.0800	CITRUS CITRON
02002AA00	0.0800	GRAPEFRUIT-UNSP
02002AB10	0.0800	GRAPEFRUIT-PULP
02002JA15	0.0800	GRAPEFRUIT-JUICE
02003AA10	0.0800	KUMQUATS
02004AA10	0.0800	LEMONS-UNSPEC
02004AB10	0.0800	LEMONS-PULP
02004HA10	23.2500	LEMONS-PEEL
02004JA10	0.0800	LEMONS-JUICE
02005AA00	0.0800	LIMES-UNSPEC
02005AB10	0.0800	LIMES-PULP
02005HA21	23.2500	LIMES-PEEL
02005JA10	0.0800	LIMES-JUICE
02006AA00	0.0800	ORANGES-UNSPEC
02006AB10	0.0800	ORANGES-PULP
02006HA21	23.2500	ORANGES-PEEL
02006JA15	0.0800	ORANGES-JUICE
02007AA10	0.0800	TANGELOS
02008AA10	0.0800	TANGERINES
02008JA15	0.0800	TANGERINE-JUICE
03001AA10	0.1000	ALMONDS
03004AA21	0.1000	CHESTNUTS
03005AA10	0.1000	FILBERTS
03008AA10	0.1000	PECANS
03009AA10	0.1000	WALNUTS
04001AA10	4.0000	APPLES-FRESH
04001DA10	4.0000	APPLES-DRIED
04001JA15	0.0400	APPLES-JUICE
04003AA10	4.0000	PEARS-FRESH
04003DA10	4.0000	PEARS-DRIED
05001AA10	0.1000	APRICOTS-FRESH
05001DA10	0.1000	APRICOTS-DRIED
05002AA10	0.1000	CHERRIES-FRESH
05002DA00	0.1000	CHERRIES-DRIED
05002JA15	0.1000	CHERRIES-JUICE
05003AA10	0.5300	NECTARINES
05004AA10	0.5300	PEACHES-FRESH
05004DA10	0.5300	PEACHES-DRIED

Table 1b: Residue Values Used in the Ethion
Acute Exposure Analysis, cont'd

Food Code	Residue	Description
05005AA10	0.8000	PLUMS-FRESH
05005DA10	0.8000	PLUMS-PRUNES
05005JA10	0.0300	PRUNE-JUICE
07003AA21	10.0000	TEA
10002AA00	1.4500	CANTALOUPE-UNSP
10002AB10	1.4500	CANTALOUPE-PULP
10003AA10	1.4500	CASABAS
10004AA00	1.4500	CRENSHAW
10005AA10	1.4500	HONEYDEW MELONS
10007AA00	0.2400	PERSION MELONS
10008AA10	2.0000	WATERMELON
10010AA10	1.4700	CUCUMBERS
10013AA10	0.5000	SQUASH-SUMMER
11001AA10	0.0060	EGGPLANT
11003AA10	0.4600	PEPPERS, SWEET
11003AB00	2.7000	CHILI PEPPERS
11003AD10	0.4600	PEPPERS-OTHER
11004AA10	1.3000	PIMENTOS
11005AA10	2.0000	TOMATOES-WHOLE
11005JA10	0.0900	TOMATOES-JUICE
11005RA10	2.0000	TOMATOES-PUREE
11005TA21	2.0000	TOMATOES-PASTE
11005UA21	2.0000	TOMATOES-CATSUP
14007AA10	0.8800	GARLIC
14010AA31	0.8800	LEEK
14011AA10	0.3300	ONIONS-DRY-BULB
14011DA12	0.3300	ONIONS-DRIED
14017AA00	0.3300	SHALLOTS
15001AA00	2.0000	BEANS-DRY-GRT NO
15001AB21	2.0000	BEANS-DRY-KIDNEY
15001AC21	2.0000	BEANS-DRY-LIMA
15001AD21	2.0000	BEANS-DRY-NAVY
15001AD31	2.0000	BEANS-DRY-NAVY
15001AE21	2.0000	BEANS-DRY-OTHER
15001AF21	2.0000	BEANS-DRY-PINTO
15002AA10	2.0000	BEANS-SUCC-LIMA
15003AA21	2.0000	BEANS-SUCC-GREEN
15003AB10	2.0000	BEANS-SUCC-OTH
15003AC21	2.0000	BEANS-SUCC-WAX
15004AA21	0.1000	CORN, POP
15005AA10	0.1000	CORN, SWEET
15013AA10	2.0000	MUNG BEANS
15022AA00	2.0000	BEANS-DRY-BROAD
15022AB00	2.0000	BEANS-SUCC-BROAD
15023AA21	2.0000	BEANS-DRY-PIGEON

Table 1b: Residue Values Used in the Ethion
Acute Exposure Analysis, cont'd

Food Code	Residue	Description
15027AA21	2.0000	BEANS-UNSPEC
15030AA00	2.0000	BEANS-DRY-HYAC
15030AB00	2.0000	BEANS-SUCC-HYAC
15031AA21	2.0000	BLKEYE PEAS-DRY
15032AA21	2.0000	BEANS-DRY
16004AA10	0.3300	ONIONS-GREEN
24002EA10	0.1000	CORN, GRAIN-ENDO
24002HA00	0.1000	CORN, GRAIN-BRAN
24002SA10	0.1000	CORN SUGAR
24006AA00	2.0000	SORGHUM
26011AA00	2.0000	GUAR BEANS
27002OA18	0.1000	CORN, GRAIN-OIL
27003WA18	0.5000	COTTONSEED-MEAL
43058AA10	3.3000	WINE AND SHERRY
50000FA10	0.0200	MILK-FAT SOLIDS
53001BA21	0.3700	BEEF-MEAT BYP
53001BB21	0.0080	BEEF-OTH ORGAN
53001FA10	0.1300	BEEF-FAT
53001KA21	0.0030	BEEF-KIDNEY
53001LA25	0.0010	BEEF-LIVER
53001MA10	0.0040	BEEF-LEAN
53002BA00	0.3700	GOAT-MEAT BYP
53002BB00	0.0080	GOAT-OTH ORGAN
53002FA23	0.1300	GOAT-FAT
53002KA00	0.0030	GOAT-KIDNEY
53002LA00	0.0010	GOAT-LIVER
53002MA23	0.0040	GOAT-LEAN
53003AA00	0.3700	HORSE
53005BA21	0.3700	SHEEP-MEAT BYP
53005BB21	0.0080	SHEEP-OTH ORGAN
53005FA21	0.1300	SHEEP-FAT
53005KA21	0.0030	SHEEP-KIDNEY
53005LA00	0.0010	SHEEP-LIVER
53005MA21	0.0040	SHEEP-LEAN
53006BA21	0.3700	PORK-MEAT BYP
53006BB21	0.0080	PORK-OTH ORGAN
53006FA10	0.1300	PORK-FAT
53006KA21	0.0030	PORK-KIDNEY
53006LA21	0.0010	PORK-LIVER
53006MA21	0.0040	PORK-LEAN

Table 1b: Residue Values Used in the Ethion
Acute Exposure Analysis, cont'd

Food Code	Residue	Description
55008BA21	0.0060	TURKEY-BYP
55008LA21	0.0060	TURKEY ORGAN
55008MA21	0.0060	TURKEY W/O SKIN
55008MB21	0.0060	TURKEY+SKIN
55008MC21	0.0060	TURKEY-UNSPEC
55013BA00	0.0060	POULTRY,OTH-BYP
55013LA25	0.0060	POULTRY,ORGAN
55013MA21	0.0060	POULTRY,OTHER
55014AA10	0.0060	EGGS-WHOLE
55014AB10	0.0060	EGGS-WHITE ONLY
55014AC10	0.0060	EGGS-YOLK ONLY
55015BA00	0.0060	CHICKEN-BYP
55015LA26	0.0060	CHICKEN-ORGAN
55015MA53	0.0060	CHICKEN-W/O SKIN
55015MB21	0.0060	CHICKEN+SKIN

Table 2

TOLERANCE ASSESSMENT SYSTEM ROUTINE CHRONIC ANALYSIS

DATE: 07/31/89

PAGE: 1

CHEMICAL INFORMATION	STUDY TYPE	EFFECTS	REFERENCE DOSES		DATA GAPS/COMMENTS	STATUS
			IPADI	UF		
Ethion	21d Human oral ChE	Decreased plasma ChE.		-->100	Chronic feeding- dog.	HED complete 08/15/86.
Caswell #427	NOEL= 0.0500 mg/kg	Doses administered by capsule.	OPP	RED= 0.000500	90d dog is co-critical.	EPA verified 09/16/86.
CAS No. 563-12-2	0.00 ppm	IBT validated study.	EPA	RED= 0.000500	Brain ChE NOEL=0.06 mg/kg	HED reassess 04/19/89.
A.I. CODE: 058401	LEL= 0.0750 mg/kg	No evidence of oncogenicity in rats or mice.			Additional UF of 10 to account for brain ChE in dog study.	EPA verified 05/17/89.
CFR No. 180.173	0.00 ppm					WHO last reviewed 1986.
	ONCO: Negative- 2 species					On IRIS.

POPULATION SUBGROUP	TOTAL TMRC (MG/KG BODY WEIGHT/DAY)		DIFFERENCE AS PERCENT OF RED	EFFECT OF ANTICIPATED RESIDUES	
	CURRENT TMRC*	NEW TMRC**		ARC	RRFD
U.S. POPULATION - 48 STATES	0.016696	3339.296000	0.000000	0.000567	113.32260
U.S. POPULATION - SPRING SEASON	0.016208	3241.512400	0.000000	0.000532	106.44160
U.S. POPULATION - SUMMER SEASON	0.016908	3381.623800	0.000000	0.000610	122.09980
U.S. POPULATION - FALL SEASON	0.016776	3355.120800	0.000000	0.000474	94.79240
U.S. POPULATION - WINTER SEASON	0.016689	3337.877600	0.000000	0.000459	91.84300
NORTHEAST REGION	0.018475	3694.953000	0.000000	0.000482	96.40160
NORTH CENTRAL REGION	0.016380	3276.018000	0.000000	0.000424	84.70160
SOUTHERN REGION	0.014817	2963.489800	0.000000	0.000666	133.13620
WESTERN REGION	0.017733	3546.653800	0.000000	0.000454	90.74960
HISPANICS	0.020350	4070.064600	0.000000	0.000397	79.49420
NON-HISPANIC WHITES	0.016633	3326.502000	0.000000	0.000545	109.01140
NON-HISPANIC BLACKS	0.014703	2940.533000	0.000000	0.000399	79.81120
NON-HISPANIC OTHERS	0.019024	3804.719600	0.000000	0.000594	118.72440
NURSING INFANTS (< 1 YEAR OLD)	0.024706	4941.276400	0.000000	0.000162	32.49400
NON-NURSING INFANTS (< 1 YEAR OLD)	0.042388	8477.683800	0.000000	0.000417	83.37900
FEMALES (13+ YEARS, PREGNANT)	0.013142	2628.483400	0.000000	0.000485	96.92780
FEMALES 13+ YEARS, NURSING	0.014223	2844.633400	0.000000	0.000753	150.56480
CHILDREN (1-6 YEARS OLD)	0.038054	7610.749000	0.000000	0.000739	147.79620
CHILDREN (7-12 YEARS OLD)	0.023754	4750.725200	0.000000	0.000551	110.19680
MALES (13-19 YEARS OLD)	0.015295	3058.900200	0.000000	0.000444	88.87480
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.013520	2704.082000	0.000000	0.000425	85.04920
MALES (20 YEARS AND OLDER)	0.012164	2432.781800	0.000000	0.000448	89.68020
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURSING)	0.012462	2492.497600	0.000000	0.000541	108.15280

*Current TMRC does not include new or pending tolerances.
 **New TMRC includes new, pending, and published tolerances.

Table 3: Overall Ethion Acute Exposure Distributions

	<u>% User Days</u>	<u>Mean Daily Residue Contribution per User Day</u>	
		<u>MG/KG/DAY</u>	<u>Average MOS</u>
U.S. Population:	100	0.008129	6
Infants:	94	0.025367	2
Children:	100	0.017786	3
Females:	100	0.006201	8
Males:	100	0.006164	8

Estimated % of user days with residue contribution exceeding the exposure X in MG/KG, where X =

	0	.001	.002	.003	.004	.005	.006	.007	.008	.009	.01	.015	.02	.025	.05 + .075	1	
U.S. Population:	100	79	67	58	51	45	40	36	33	29	26	16	10	7	1	0	0
Infants:	100	75	69	67	64	61	60	57	55	54	52	45	39	35	19	9	4
Children:	100	88	79	72	67	63	60	57	54	51	49	39	32	26	8	3	1
Females:	100	77	64	55	47	40	35	31	27	24	21	11	6	3	0	0	0
Males:	100	77	64	55	48	41	36	32	28	24	21	10	5	3	0	0	0
MOS		50	25	17	13	10	8	7	6	6	5	3	2	2	1	.7	.5

NOTE: The distributions shown above represent the exposure encountered by people who consume food containing Ethion residues at levels specified in the accompanying memorandum and tables.

Table 4: Ethion Acute Exposure Analysis Summary

	% Consumers	Avg. MOS	% Cons. < 10	Min MOS
TOTAL				
U.S. Population	100	6	45	< 1
Infants	94	2	61	< 1
Children Aged 1 - 6	100	3	63	< 1
Adult Females	100	8	40	< 1
Adult Males	100	8	41	< 1
APPLES and PEARS				
U.S. Population	33	7	43	< 1
Infants	49	1	81	< 1
Children Aged 1 - 6	43	4	47	< 1
Adult Females	30	10	41	1
Adult Males	32	11	38	1
GRAPES				
U.S. Population	27	16	16	1
Infants	5	4	30	< 1
Children Aged 1 - 6	35	8	20	< 1
Adult Females	24	18	18	1
Adult Males	27	22	14	1
MELONS				
U.S. Population	3	6	53	< 1
Infants	4	7	62	2
Children Aged 1 - 6	2	3	83	< 1
Adult Females	3	7	51	< 1
Adult Males	3	7	45	< 1
TOMATOES				
U.S. Population	55	18	16	2
Infants	29	14	15	1
Children Aged 1 - 6	51	9	38	1
Adult Females	55	22	12	3
Adult Males	57	22	12	3
DRY BEANS				
U.S. Population	12	12	8	3
Infants	3	9	34	2
Children Aged 1 - 6	14	12	29	2
Adult Females	11	28	3	6
Adult Males	13	27	4	6

Table 4: Ethion Acute Exposure Analysis Summary, cont'd

	% Consumers	Avg. MOS	% Cons. < 10	Min MOS
SUCCULENT BEANS				
U.S. Population	16	15	17	2
Nursing Infants	10	3	84	< 1
Children Aged 1 - 6	14	8	51	1
Adult Females	15	17	12	3
Adult Males	16	18	10	3
STRAWBERRIES and OTHER CITRUS				
U.S. Population	31	200	1	6
Infants	3	35	6	1
Children Aged 1 - 6	28	111	2	3
Adult Females	32	219	1	7
Adult Males	32	236	1	7
PLUMS/PRUNES				
U.S. Population	2	29	5	3
Infants	5	7	50	1
Children Aged 1 - 6	1	13	27	3
Adult Females	2	37	1	8
Adult Males	2	39	1	8
PEACHES				
U.S. Population	20	85	2	6
Infants	17	9	52	2
Children Aged 1 - 6	24	48	6	3
Adult Females	18	112	0	13
Adult Males	19	144	0	13
MISCELLANEOUS VEGETABLES				
U.S. Population	61	150	1	8
Infants	28	166	1	7
Children Aged 1 - 6	59	98	1	3
Adult Females	59	157	1	8
Adult Males	63	175	0	10
TEA				
U.S. Population	27	43	1	8
Infants	2	13	24	2
Children Aged 1 - 6	14	21	6	5
Adult Females	34	45	0	10
Adult Males	27	50	0	10

Table 4: Ethion Acute Exposure Analysis Summary, cont'd

	% Consumers	Avg. MOS	% Cons. < 10	Min MOS
ORANGES				
U.S. Population	30	143	0	17
Infants	18	47	1	7
Children Aged 1 - 6	34	58	0	13
Adult Females	29	195	0	25
Adult Males	28	218	0	25
GRAPEFRUIT				
U.S. Population	5	198	0	25
Infants	< 1	33	0	13
Children Aged 1 - 6	1	63	0	17
Adult Females	6	205	0	25
Adult Males	5	244	0	50
APRICOTS, CHERRIES, NECTARINES				
U.S. Population	20	725	0	25
Infants	13	151	0	17
Children Aged 1 - 6	27	472	0	13
Adult Females	17	758	0	25
Adult Males	19	1042	0	25
EGGS				
U.S. Population	90	12500	0	50
Infants	34	5556	0	50
Children Aged 1 - 6	92	6250	0	50
Adult Females	90	16667	0	50
Adult Males	92	16667	0	50
GRAINS				
U.S. Population	98	1250	0	50
Infants	59	472	0	50
Children Aged 1 - 6	99	526	0	50
Adult Females	98	1852	0	50
Adult Males	99	1613	0	50
MEATS				
U.S. Population	98	555	0	50
Infants	49	521	0	50
Children Aged 1 - 6	99	296	0	50
Adult Females	98	746	0	50
Adult Males	99	581	0	50

Table 4: Ethion Acute Exposure Analysis Summary, cont'd

	% Consumers	Avg. MOS	% Cons. < 10	Min MOS
NUTS				
U.S. Population	12	4545	0	50
Infants	2	2632	0	50
Children Aged 1 - 6	16	2941	0	50
Adult Females	10	5000	0	50
Adult Males	12	5000	0	50
POULTRY				
U.S. Population	25	4167	0	50
Infants	24	2000	0	50
Children Aged 1 - 6	28	2273	0	50
Adult Females	25	5000	0	50
Adult Males	24	5000	0	50